

What is claimed is:

1. A cool air supplying apparatus of a refrigerator comprising:

a guide passage formed at a rear wall of a refrigerating chamber and  
5 provided with a plurality of discharge ports towards the refrigerating chamber for  
guiding cool air to a rear side of the refrigerating chamber;

temperature sensors installed at each position of the refrigerating  
chamber, for detecting temperature inside the refrigerating chamber;

10 a direction control plate disposed near a surface of the guide passage  
where the discharge ports are formed and moving along a widthwise direction of  
the guide passage, for selectively opening and closing the discharge ports;

a control plate driving unit for moving the direction control plate; and

15 a control unit for automatically controlling the control plate driving unit  
according to temperature inside the refrigerating chamber detected by the  
temperature sensors.

2. The apparatus of claim 1, wherein the control plate driving unit  
comprises:

a driving motor for providing a driving force;

20 a rack gear installed at one side of the direction control plate; and

a pinion gear installed at a motor shaft of the driving motor and engaged  
to the rack gear, for transmitting a driving force of the driving motor to the rack  
gear.

3. The apparatus of claim 2, wherein the driving motor is a stepping motor rotated at a certain step angle.

5 4. The apparatus of claim 1, wherein the discharge ports positioned at a side corresponding to a direction that the direction control plate is moved are closed and the discharge ports positioned at an opposite side to a direction that the direction control plate is moved are opened when the direction control plate is moved to one side from a widthwise direction center of the guide 10 passage.

5. The apparatus of claim 1, wherein the direction control plate is provided with a connection hole perforated at a position spaced from a center of the direction control plate with a certain distance, and the connection hole is 15 connected to one discharge port by a movement of the direction control plate.

6. The apparatus of claim 5, wherein all the discharge ports are opened when the connection hole is connected to one of the discharge ports.

20 7. The apparatus of claim 1, wherein the guide passage comprises: a guiding groove formed to be long in a longitudinal direction at a rear wall of the refrigerating chamber; and a guiding plate installed at a front side of the guiding groove and

provided with a plurality of discharge ports along lengthwise and widthwise directions thereof.

8. The apparatus of claim 7, wherein the guiding plate and the  
5 direction control plate are protruding towards the refrigerating chamber 20 and  
have a sectional surface of a circular arc shape.

9. The apparatus of claim 1, further comprising:  
left and right guide passages formed at left and right walls of the  
10 refrigerating chamber and provided with a plurality of supply ports towards the  
refrigerating chamber along a lengthwise direction thereof, for guiding cool air to  
left and right sides of the refrigerating chamber; and  
an upper guide passage formed at an upper side of the refrigerating  
chamber for guiding cool air to the upper side of the refrigerating chamber.

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10. A cool air supplying apparatus of a refrigerator comprising:  
a guide passage formed at a rear wall of a refrigerating chamber and  
provided with a plurality of discharge ports towards the refrigerating chamber for  
guiding cool air to a rear side of the refrigerating chamber;  
20 a direction control unit installed at the guide passage for selectively  
opening and closing the discharge ports in order to control a discharge direction  
of cool air discharged into the refrigerating chamber;  
temperature sensors installed at each position of the refrigerating

chamber for detecting a position where high temperature load is generated in the refrigerating chamber; and

a control unit for automatically controlling the direction control unit in order to set a discharge direction of cool air to be towards the position where 5 high temperature load is generated according to a temperature signal detected by the temperature sensors.

11. The apparatus of claim 10, wherein the direction control unit comprises:

10 a direction control plate disposed near a surface where the discharge ports are formed and moving along a widthwise direction of the guide passage, for selectively opening and closing the discharge ports; and  
a control plate driving unit for moving the direction control plate.

15 12. The apparatus of claim 11, wherein the direction control plate is provided with a connection hole perforated at a position spaced from a center of the direction control plate with a certain distance, and the connection hole is connected to one discharge port by a movement of the direction control plate.

20 13. The apparatus of claim 12, wherein all the discharge ports are opened when the connection hole is connected to one discharge port.

14. The apparatus of claim 11, wherein the control plate driving unit

comprises:

- a driving motor for providing a driving force;
- a rack gear installed at one side of the direction control plate; and
- a pinion gear installed at a motor shaft of the driving motor and engaged

5 to the rack gear, for transmitting a driving force generated from the driving motor to the rack gear.

15. The apparatus of claim 14, wherein the driving motor is a stepping motor rotated at a certain step angle.

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16. The apparatus of claim 10, wherein the guide passage is protruding towards the refrigerating chamber and has a sectional surface of a circular arc shape.

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17. The apparatus of claim 10, further comprising:  
left and right guide passages formed at left and right walls of the refrigerating chamber and provided with a plurality of supply ports towards the refrigerating chamber along a lengthwise direction thereof, for guiding cool air to left and right sides of the refrigerating chamber; and

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an upper guide passage formed at an upper side of the refrigerating chamber for guiding cool air to the upper side of the refrigerating chamber.